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CLAIMS:

1. Hollow nanoparticles formed of a particle-forming protein with an ability to recognize a specific cell, wherein the protein contains at least one modified cysteine residue.

2. Hollow nanoparticles as set forth in claim 1, wherein the protein comprises a hepatitis B virus surface-antigen protein.

3. Hollow nanoparticles as set forth in claim 1 or 2, wherein at least one cysteine residue present in a transmembrane region is replaced with a hydrophobic amino acid, and/or at least one cysteine residue present outside or inside the particles is replaced with a hydrophilic amino acid.

4. Hollow nanoparticles as set forth in claim 3, wherein at least one cysteine residue present in a transmembrane region is replaced with an alanine residue, and/or at least one cysteine residue present inside or outside the particles is replaced with a serine residue.

5. Hollow nanoparticles as set forth in any one of claims 2 through 4, wherein the hepatitis B virus surface-antigen protein contains S protein with an amino acid sequence whose cysteine residues 76, 90, 139, 147, 149, 221 and at least one of cysteine residues 137 and 138 of the amino acid sequence from its N-terminus have been replaced.

6. Hollow nanoparticles as set forth in any one of claims 1 through 5, wherein the cysteine residues are modified by mutating a gene that encodes the particle-forming protein and by expressing the mutated gene.

7. Hollow nanoparticles as set forth in claim 6, which are obtained by transforming a eukaryotic cell with a vector including the mutated gene, and by expressing the mutated gene in the eukaryotic cell.

8. Hollow nanoparticles as set forth in claim 7, wherein the eukaryotic cell is an animal cell or a yeast cell.

9. A drug which comprises hollow nanoparticles of any one of claims 1 through 8 in which a substance to be transferred into a cell is encapsulated.

10. A drug as set forth in claim 9, wherein the substance to be transferred into a cell comprises a gene.

11. A therapeutic method using a drug of claim 9 or 10.